Recurrent Neural Network-Predictions for PSO in Dynamic Optimization

Supplementary Material

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ABSTRACT

In this supplementary material, we provide the complete result tables for the analysis of different parameter settings. The tables on the following pages contain the experimental results obtained by executing all PSO variants with different parameter settings as described in the paper.

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Table 1: Results for dynPSO on SRR benchmark

Metric		BOG			BEBC			RCS		
Benchmark		1.05	1.49	2.00	1.05	1.49	2.00	1.05	1.49	2.00
sph.	2 lin.	9.2E-1	6.0E-2	5.4E-2	3.5E-5	5.2E-5	5.8E-5	0.01	0.01	0.03
sph.	5 lin.	8.2E+0	3.1E+0	4.3E+0	1.9E-2	2.7E-2	7.2E-2	0.02	0.02	0.04
sph.	10 lin.	3.2E+1	2.2E+1	3.9E+1	4.1E-1	1.4E+0	4.1E+0	0.05	0.07	0.12
sph.	20 lin.	1.5E+2	1.6E+2	3.0E+2	2.3E+1	3.5E+1	9.3E+1	0.15	0.20	0.32
sph.	50 lin.	6.7E+4	3.5E+3	6.4E+3	6.5E+4	2.3E+3	4.5E+3	0.89	0.56	0.64
sph.	100 lin.	3.2E+6	7.0E+4	6.3E+4	3.2E+6	6.3E+4	5.4E+4	0.97	0.83	0.81
sph.	2 sin.	8.1E+0	1.6E-1	1.3E-1	1.3E-4	1.0E-4	1.4E-4	0.01	0.02	0.02
sph.	5 sin.	1.2E+1	2.7E+0	7.2E+0	1.9E-1	3.6E-2	1.8E-1	0.03	0.03	0.05
sph.	10 sin.	4.5E+2	9.4E+1	1.7E+2	2.9E+2	5.7E+0	1.8E+1	0.15	0.06	0.10
sph.	20 sin.	1.3E+3	4.6E+2	8.3E+2	9.3E+2	1.0E+2	2.5E+2	0.31	0.18	0.27
sph.	50 sin.	6.6E+4	9.2E+3	1.4E+4	6.3E+4	5.4E+3	9.1E+3	0.82	0.47	0.55
sph.	100 sin.	4.9E+5	4.1E+4	5.2E+4	4.8E+5	3.3E+4	4.2E+4	0.94	0.71	0.73
ros.	2 lin.	3.8E+2	3.8E+0	1.7E+0	6.4E-3	1.2E-3	1.5E-2	0.01	0.01	0.03
ros.	5 lin.	1.1E+4	2.5E+3	2.4E+3	2.1E+1	1.8E+1	3.9E+1	0.01	0.01	0.02
ros.	10 lin.	2.2E+5	9.0E+4	1.8E+5	5.2E+2	8.4E+2	2.5E+3	0.02	0.02	0.04
ros.	20 lin.	4.2E+6	1.0E+7	1.6E+7	8.2E+5	2.9E+6	2.9E+6	0.18	0.16	0.14
ros.	50 lin.	7.2E+9	2.7E+8	5.2E+8	6.7E+9	1.2E+8	3.1E+8	0.57	0.37	0.50
ros.	100 lin.	4.6E+11	1.4E+10	1.7E+10	4.5E+11	1.1E+10	1.3E+10	0.90	0.72	0.71
ros.	2 sin.	3.1E+6	3.7E+4	4.4E+1	2.1E+6	1.5E-1	6.3E+0	0.43	0.01	0.05
ros.	5 sin.	1.3E+9	7.6E+3	1.7E+4	1.2E+9	8.3E+1	4.1E+2	0.35	0.02	0.04
ros.	10 sin.	1.6E+6	4.8E+5	1.4E+6	4.6E+3	7.3E+3	4.1E+4	0.01	0.02	0.04
ros.	20 sin.	6.7E+6	8.1E+6	2.0E+7	3.8E+5	6.5E+5	1.9E+6	0.04	0.07	0.11
ros.	50 sin.	1.6E+9	8.2E+8	2.0E+9	1.4E+9	3.2E+8	9.1E+8	0.55	0.27	0.37
ros.	100 sin.	3.9E+11	5.6E+9	1.2E+10	3.9E+11	3.9E+9	8.1E+9	0.91	0.52	0.61
rast.	2 lin.	3.8E+0	1.6E+0	1.4E+0	1.2E-2	5.6E-3	2.2E-2	0.03	0.03	0.07
rast.	5 lin.	2.4E+5	2.2E+1	2.7E+1	2.4E+5	7.4E+0	1.1E+1	0.64	0.18	0.26
rast.	10 lin.	5.9E+5	9.9E+1	1.3E+2	5.9E+5	5.6E+1	6.8E+1	0.90	0.33	0.36
rast.	20 lin.	3.0E+5	4.0E+2	5.6E+2	3.0E+5	2.3E+2	3.1E+2	0.87	0.42	0.46
rast.	50 lin.	2.0E+5	4.1E+3	7.2E+3	2.0E+5	2.8E+3	5.2E+3	0.93	0.60	0.67
rast.	100 lin.	3.2E+6	6.2E+4	6.2E+4	3.2E+6	5.5E+4	5.3E+4	0.98	0.81	0.80
rast.	2 sin.	9.9E+1	5.1E+0	2.3E+0	6.4E+1	1.0E-1	1.3E-1	0.18	0.04	0.09
rast.	5 sin.	4.7E+4	2.6E+1	3.6E+1	4.7E+4	1.0E+1	1.5E+1	0.83	0.22	0.25
rast.	10 sin.	1.3E+3	1.8E+2	2.6E+2	1.1E+3	7.5E+1	1.0E+2	0.41	0.17	0.19
rast.	20 sin.	6.9E+4	6.6E+2	1.0E+3	6.8E+4	3.1E+2	4.5E+2	0.88	0.28	0.33
rast.	50 sin.	1.8E+5	1.0E+4	1.5E+4	1.7E+5	6.2E+3	9.6E+3	0.89	0.49	0.56
rast.	100 sin.	2.1E+5	4.3E+4	5.1E+4	2.1E+5	3.5E+4	4.2E+4	0.93	0.71	0.73
Best frequen.		3	25	8	8	26	2	11	21	4

Table 2: Results for pred2p on SRR benchmark

Metric		BOG			BEBC			RCS		
Benchmark		1.05	1.49	2.00	1.05	1.49	2.00	1.05	1.49	2.00
sph.	2 lin.	9.6E-1	6.4E-2	5.5E-2	3.1E-5	4.9E-5	6.3E-5	0.01	0.01	0.03
sph.	5 lin.	8.0E+0	3.0E+0	4.2E+0	1.9E-2	2.8E-2	7.1E-2	0.02	0.02	0.04
sph.	10 lin.	3.1E+1	2.2E+1	3.9E+1	4.1E-1	1.3E+0	4.1E+0	0.05	0.07	0.12
sph.	20 lin.	1.4E+2	1.6E+2	3.0E+2	1.7E+1	3.6E+1	9.2E+1	0.14	0.20	0.31
sph.	50 lin.	2.7E+3	3.4E+3	6.2E+3	1.8E+3	2.2E+3	4.3E+3	0.15	0.56	0.62
sph.	100 lin.	6.4E+4	5.5E+4	6.2E+4	5.8E+4	4.8E+4	5.3E+4	0.18	0.69	0.80
sph.	2 sin.	7.3E+0	1.5E-1	1.4E-1	9.5E-5	1.1E-4	1.5E-4	0.01	0.02	0.02
sph.	5 sin.	1.2E+1	2.8E+0	7.0E+0	7.1E-2	3.8E-2	1.9E-1	0.02	0.04	0.05
sph.	10 sin.	1.5E+2	9.3E+1	1.7E+2	4.0E+0	5.5E+0	1.8E+1	0.05	0.06	0.10
sph.	20 sin.	6.0E+2	4.5E+2	8.1E+2	2.5E+2	1.0E+2	2.4E+2	0.17	0.18	0.27
sph.	50 sin.	8.0E+3	9.2E+3	1.4E+4	5.2E+3	5.5E+3	9.2E+3	0.20	0.47	0.55
sph.	100 sin.	3.8E+4	4.1E+4	5.1E+4	3.2E+4	3.3E+4	4.2E+4	0.25	0.70	0.73
ros.	2 lin.	3.8E+2	4.0E+0	1.6E+0	9.0E-3	4.2E-3	1.1E-2	0.01	0.01	0.03
ros.	5 lin.	1.1E+4	2.6E+3	2.4E+3	2.0E+1	2.0E+1	3.7E+1	0.01	0.01	0.02
ros.	10 lin.	2.2E+5	9.0E+4	3.4E+5	2.8E+2	9.5E+2	8.7E+4	0.02	0.02	0.06
ros.	20 lin.	2.7E+6	1.1E+7	1.9E+7	1.8E+5	3.2E+6	3.6E+6	0.05	0.17	0.17
ros.	50 lin.	1.3E+8	2.6E+8	5.5E+8	4.8E+7	1.1E+8	3.2E+8	0.20	0.36	0.52
ros.	100 lin.	1.1E+10	9.1E+9	1.8E+10	9.5E+9	7.1E+9	1.4E+10	0.16	0.55	0.74
ros.	2 sin.	3.1E+5	3.0E+4	2.9E+1	3.8E+3	1.5E+0	3.4E+0	0.05	0.02	0.04
ros.	5 sin.	4.1E+5	5.1E+3	1.6E+4	3.7E+1	7.8E+1	6.7E+2	0.00	0.02	0.04
ros.	10 sin.	1.6E+6	5.6E+5	1.4E+6	5.2E+3	1.2E+4	3.6E+4	0.01	0.02	0.04
ros.	20 sin.	5.3E+6	7.8E+6	2.3E+7	1.1E+5	6.2E+5	2.3E+6	0.03	0.07	0.12
ros.	50 sin.	3.2E+8	7.8E+8	2.1E+9	1.2E+8	3.0E+8	9.4E+8	0.14	0.26	0.38
ros.	100 sin.	3.5E+9	5.5E+9	1.1E+10	2.5E+9	3.7E+9	8.0E+9	0.16	0.50	0.60
rast.	2 lin.	3.8E+0	1.7E+0	1.4E+0	1.1E-2	6.6E-3	2.6E-2	0.03	0.03	0.07
rast.	5 lin.	4.9E+1	2.2E+1	2.7E+1	2.0E+1	7.5E+0	1.1E+1	0.08	0.18	0.26
rast.	10 lin.	2.2E+2	1.0E+2	1.3E+2	1.3E+2	5.6E+1	6.8E+1	0.08	0.33	0.36
rast.	20 lin.	6.2E+2	4.0E+2	5.6E+2	3.9E+2	2.3E+2	3.1E+2	0.12	0.42	0.46
rast.	50 lin.	6.7E+3	4.0E+3	7.0E+3	5.4E+3	2.8E+3	5.0E+3	0.17	0.60	0.65
rast.	100 lin.	9.3E+4	5.3E+4	6.3E+4	8.6E+4	4.6E+4	5.4E+4	0.21	0.71	0.81
rast.	2 sin.	3.2E+1	5.2E+0	2.3E+0	1.1E+1	1.2E-1	1.4E-1	0.06	0.04	0.09
rast.	5 sin.	1.0E+2	2.6E+1	3.5E+1	6.2E+1	1.0E+1	1.5E+1	0.07	0.22	0.25
rast.	10 sin.	4.1E+2	1.8E+2	2.6E+2	2.2E+2	7.5E+1	9.9E+1	0.16	0.17	0.19
rast.	20 sin.	1.1E+3	6.7E+2	1.0E+3	7.0E+2	3.1E+2	4.5E+2	0.12	0.28	0.33
rast.	50 sin.	9.8E+3	1.0E+4	1.5E+4	7.0E+3	6.1E+3	9.6E+3	0.18	0.49	0.56
rast.	100 sin.	4.0E+4	4.3E+4	5.2E+4	3.4E+4	3.5E+4	4.2E+4	0.29	0.71	0.73
Best frequen.		11	18	7	18	18	0	33	3	0

Table 3: Results for pred3 on SRR benchmark

Metric		BOG					BEBC					RCS				
Benchmark		1.05	1.49	2.00	additive	adaptive	1.05	1.49	2.00	additive	adaptive	1.05	1.49	2.00	additive	adaptive
sph. 2 lin.		5.0E-1	4.8E-2	5.7E-2	4.1E-2	4.8E-2	2.8E-5	5.2E-5	6.3E-5	5.4E-5	5.1E-5	0.00	0.01	0.03	0.04	0.02
sph. 5 lin.		3.1E+0	2.1E+0	3.4E+0	2.4E+0	2.1E+0	1.8E-2	2.6E-2	6.3E-2	3.2E-2	2.7E-2	0.01	0.02	0.04	0.06	0.04
sph. 10 lin.		1.5E+1	1.7E+1	3.1E+1	2.1E+1	1.7E+1	3.2E-1	1.3E+0	3.3E+0	1.8E+0	1.3E+0	0.02	0.06	0.09	0.11	0.10
sph. 20 lin.		7.7E+1	1.4E+2	2.4E+2	1.4E+2	1.4E+2	9.6E+0	3.5E+1	6.9E+1	3.1E+1	3.5E+1	0.07	0.18	0.24	0.22	0.26
sph. 50 lin.		1.7E+3	2.2E+3	5.7E+3	2.5E+3	2.2E+3	1.1E+3	1.4E+3	3.9E+3	1.5E+3	1.4E+3	0.13	0.34	0.57	0.49	0.51
sph. 100 lin.		4.0E+4	2.8E+4	5.1E+4	2.8E+4	2.7E+4	3.6E+4	2.3E+4	4.3E+4	2.3E+4	2.2E+4	0.16	0.37	0.65	0.72	0.70
sph. 2 sin.		2.1E+0	1.1E-1	2.0E-1	1.7E-1	1.1E-1	7.9E-5	1.6E-4	2.2E-4	2.4E-4	1.6E-4	0.00	0.02	0.03	0.03	0.03
sph. 5 sin.		5.0E+0	3.8E+0	9.6E+0	6.2E+0	3.8E+0	3.4E-2	5.9E-2	2.4E-1	9.7E-2	5.9E-2	0.02	0.05	0.07	0.06	0.06
sph. 10 sin.		1.1E+2	1.1E+2	1.9E+2	1.3E+2	1.1E+2	2.4E+0	6.6E+0	1.8E+1	7.5E+0	6.7E+0	0.03	0.07	0.11	0.08	0.09
sph. 20 sin.		4.4E+2	4.6E+2	8.1E+2	4.9E+2	4.6E+2	1.6E+2	1.1E+2	2.3E+2	1.1E+2	1.1E+2	0.12	0.19	0.26	0.19	0.20
sph. 50 sin.		5.6E+3	8.2E+3	1.5E+4	9.1E+3	8.2E+3	2.9E+3	4.5E+3	9.2E+3	5.2E+3	4.5E+3	0.15	0.42	0.56	0.48	0.46
sph. 100 sin.		2.8E+4	3.7E+4	5.2E+4	3.7E+4	3.7E+4	2.1E+4	2.8E+4	4.2E+4	2.8E+4	2.8E+4	0.20	0.62	0.73	0.68	0.68
ros. 2 lin.		1.2E+2	7.8E-1	1.6E+0	6.0E-1	7.9E-1	5.5E-3	1.0E-3	2.2E-2	1.2E-3	1.2E-3	0.00	0.01	0.03	0.03	0.02
ros. 5 lin.		5.4E+3	2.1E+3	2.4E+3	2.2E+3	2.1E+3	1.9E+1	1.9E+1	3.5E+1	2.1E+1	2.0E+1	0.00	0.01	0.02	0.03	0.03
ros. 10 lin.		1.9E+5	8.4E+4	3.8E+5	9.0E+4	8.3E+4	1.2E+2	6.3E+2	8.1E+4	6.7E+2	5.8E+2	0.01	0.02	0.05	0.04	0.04
ros. 20 lin.		2.2E+6	1.1E+7	1.6E+7	9.5E+6	1.1E+7	4.9E+3	3.1E+6	2.8E+6	2.5E+6	3.0E+6	0.01	0.17	0.14	0.18	0.19
ros. 50 lin.		6.8E+7	1.4E+8	4.5E+8	1.7E+8	1.4E+8	1.8E+7	5.2E+7	2.6E+8	6.3E+7	5.1E+7	0.09	0.19	0.39	0.33	0.32
ros. 100 lin.		7.7E+9	3.8E+9	1.1E+10	3.5E+9	3.6E+9	6.8E+9	2.7E+9	8.5E+9	2.5E+9	2.5E+9	0.14	0.26	0.50	0.58	0.59
ros. 2 sin.		5.9E+4	6.2E+3	2.9E+1	6.2E+3	6.3E+3	3.7E+3	1.3E-1	1.5E+0	1.5E-1	1.8E-1	0.04	0.01	0.04	0.04	0.04
ros. 5 sin.		1.2E+5	5.4E+3	2.8E+4	1.3E+4	5.4E+3	1.1E+1	9.8E+1	7.7E+2	1.9E+2	9.7E+1	0.00	0.03	0.05	0.04	0.04
ros. 10 sin.		9.1E+5	6.4E+5	1.9E+6	8.9E+5	6.3E+5	2.9E+3	1.3E+4	4.2E+4	1.6E+4	1.3E+4	0.01	0.03	0.04	0.03	0.03
ros. 20 sin.		3.6E+6	8.4E+6	2.4E+7	1.0E+7	8.4E+6	5.7E+4	6.7E+5	2.2E+6	6.7E+5	6.5E+5	0.02	0.08	0.12	0.09	0.09
ros. 50 sin.		2.4E+8	6.4E+8	2.0E+9	7.9E+8	6.5E+8	6.7E+7	2.2E+8	8.6E+8	2.8E+8	2.2E+8	0.10	0.21	0.36	0.27	0.26
ros. 100 sin.		2.6E+9	5.1E+9	1.1E+10	5.2E+9	5.1E+9	1.5E+9	3.2E+9	7.3E+9	3.3E+9	3.2E+9	0.14	0.46	0.56	0.51	0.52
rast. 2 lin.		2.1E+0	1.2E+0	1.4E+0	1.1E+0	1.2E+0	4.7E-3	6.1E-3	2.9E-2	5.9E-3	5.7E-3	0.01	0.02	0.07	0.07	0.04
rast. 5 lin.		2.2E+1	2.0E+1	2.6E+1	2.2E+1	2.0E+1	6.9E+0	7.2E+0	1.1E+1	8.8E+0	7.3E+0	0.05	0.17	0.25	0.29	0.26
rast. 10 lin.		1.3E+2	9.5E+1	1.2E+2	9.9E+1	9.5E+1	8.1E+1	5.6E+1	6.4E+1	5.7E+1	5.6E+1	0.08	0.33	0.33	0.39	0.41
rast. 20 lin.		3.9E+2	3.6E+2	5.0E+2	3.7E+2	3.6E+2	2.5E+2	2.2E+2	2.9E+2	2.2E+2	2.2E+2	0.10	0.39	0.41	0.44	0.48
rast. 50 lin.		4.9E+3	2.6E+3	6.4E+3	3.0E+3	2.6E+3	4.1E+3	1.8E+3	4.6E+3	2.0E+3	1.8E+3	0.15	0.39	0.59	0.55	0.58
rast. 100 lin.		5.3E+4	2.9E+4	5.1E+4	3.0E+4	2.9E+4	4.8E+4	2.4E+4	4.3E+4	2.4E+4	2.4E+4	0.17	0.39	0.66	0.72	0.71
rast. 2 sin.		1.7E+1	2.4E+0	2.7E+0	2.7E+0	2.4E+0	9.4E+0	8.5E-2	2.0E-1	1.3E-1	8.5E-2	0.04	0.04	0.10	0.09	0.09
rast. 5 sin.		4.6E+1	2.8E+1	4.0E+1	3.3E+1	2.8E+1	2.5E+1	1.1E+1	1.6E+1	1.3E+1	1.1E+1	0.06	0.25	0.27	0.27	0.29
rast. 10 sin.		3.1E+2	2.0E+2	2.8E+2	2.2E+2	2.0E+2	1.6E+2	7.9E+1	1.0E+2	8.0E+1	7.9E+1	0.12	0.18	0.20	0.18	0.20
rast. 20 sin.		8.0E+2	6.8E+2	1.0E+3	7.2E+2	6.8E+2	4.8E+2	3.1E+2	4.4E+2	3.1E+2	3.1E+2	0.10	0.28	0.33	0.28	0.30
rast. 50 sin.		6.7E+3	8.8E+3	1.5E+4	9.8E+3	8.9E+3	4.0E+3	5.1E+3	9.4E+3	5.8E+3	5.1E+3	0.14	0.43	0.56	0.49	0.48
rast. 100 sin.		2.9E+4	3.9E+4	5.2E+4	3.9E+4	3.9E+4	2.2E+4	3.0E+4	4.2E+4	3.0E+4	3.0E+4	0.23	0.63	0.74	0.69	0.69
Best frequen.		13	12	1	4	6	23	7	0	3	3	35	1	0	0	0

Table 4: Results for pred3p on SRR benchmark

Metric		BOG					BEBG					RCS				
Benchmark		1.05	1.49	2.00	additive	adaptive	1.05	1.49	2.00	additive	adaptive	1.05	1.49	2.00	additive	adaptive
sph. 2 lin.		5.0E-1	4.8E-2	5.7E-2	4.2E-2	4.9E-2	2.9E-5	5.1E-5	6.7E-5	5.3E-5	5.3E-5	0.00	0.01	0.03	0.04	0.03
sph. 5 lin.		3.1E+0	2.1E+0	3.4E+0	2.4E+0	2.1E+0	1.8E-2	2.7E-2	6.5E-2	3.2E-2	2.7E-2	0.01	0.02	0.04	0.06	0.04
sph. 10 lin.		1.5E+1	1.7E+1	3.1E+1	2.1E+1	1.7E+1	3.2E-1	1.3E+0	3.3E+0	1.7E+0	1.3E+0	0.02	0.06	0.09	0.11	0.10
sph. 20 lin.		7.7E+1	1.4E+2	2.4E+2	1.4E+2	1.4E+2	9.6E+0	3.5E+1	6.9E+1	3.0E+1	3.4E+1	0.07	0.18	0.24	0.21	0.26
sph. 50 lin.		1.7E+3	2.2E+3	5.7E+3	2.5E+3	2.2E+3	1.2E+3	1.4E+3	3.9E+3	1.5E+3	1.3E+3	0.13	0.34	0.57	0.50	0.50
sph. 100 lin.		4.2E+4	2.9E+4	5.2E+4	2.8E+4	2.8E+4	3.7E+4	2.4E+4	4.4E+4	2.3E+4	2.3E+4	0.17	0.38	0.67	0.71	0.73
sph. 2 sin.		2.1E+0	1.1E-1	2.0E-1	1.7E-1	1.2E-1	8.0E-5	1.6E-4	2.3E-4	2.5E-4	1.6E-4	0.00	0.02	0.03	0.03	0.03
sph. 5 sin.		5.0E+0	3.8E+0	9.5E+0	6.2E+0	3.8E+0	3.4E-2	5.9E-2	2.4E-1	9.8E-2	5.9E-2	0.02	0.05	0.07	0.06	0.06
sph. 10 sin.		1.1E+2	1.1E+2	1.9E+2	1.3E+2	1.1E+2	2.4E+0	6.7E+0	1.8E+1	7.3E+0	6.7E+0	0.03	0.07	0.11	0.08	0.08
sph. 20 sin.		4.4E+2	4.6E+2	8.2E+2	5.0E+2	4.6E+2	1.6E+2	1.1E+2	2.3E+2	1.1E+2	1.1E+2	0.12	0.19	0.26	0.19	0.20
sph. 50 sin.		5.6E+3	8.2E+3	1.5E+4	9.1E+3	8.2E+3	2.9E+3	4.5E+3	9.0E+3	5.2E+3	4.5E+3	0.15	0.41	0.55	0.48	0.46
sph. 100 sin.		2.7E+4	3.6E+4	5.2E+4	3.6E+4	3.6E+4	2.0E+4	2.8E+4	4.2E+4	2.8E+4	2.8E+4	0.20	0.62	0.73	0.67	0.68
ros. 2 lin.		1.2E+2	7.7E-1	1.6E+0	6.1E-1	7.8E-1	5.5E-3	9.9E-4	1.7E-2	1.2E-3	9.6E-4	0.00	0.01	0.03	0.03	0.02
ros. 5 lin.		5.4E+3	2.1E+3	2.3E+3	2.2E+3	2.1E+3	1.9E+1	1.9E+1	3.6E+1	2.3E+1	1.9E+1	0.00	0.01	0.02	0.03	0.02
ros. 10 lin.		1.9E+5	8.4E+4	3.0E+5	8.9E+4	8.3E+4	1.2E+2	7.3E+2	4.5E+4	6.1E+2	5.6E+2	0.01	0.02	0.05	0.04	0.04
ros. 20 lin.		2.2E+6	1.0E+7	1.5E+7	9.2E+6	1.1E+7	4.9E+3	2.8E+6	2.5E+6	2.4E+6	3.1E+6	0.01	0.15	0.13	0.17	0.20
ros. 50 lin.		7.1E+7	1.4E+8	4.6E+8	1.7E+8	1.5E+8	2.0E+7	5.2E+7	2.7E+8	6.3E+7	5.3E+7	0.10	0.19	0.40	0.33	0.33
ros. 100 lin.		7.7E+9	3.7E+9	1.1E+10	3.4E+9	3.7E+9	6.8E+9	2.7E+9	8.5E+9	2.4E+9	2.6E+9	0.14	0.26	0.50	0.57	0.60
ros. 2 sin.		5.9E+4	6.2E+3	3.6E+1	6.2E+3	6.2E+3	3.7E+3	1.3E-1	2.6E+0	1.6E-1	1.4E-1	0.04	0.01	0.05	0.04	0.04
ros. 5 sin.		1.1E+5	5.5E+3	2.9E+4	1.4E+4	5.3E+3	9.2E+0	1.0E+2	7.3E+2	2.1E+2	9.9E+1	0.00	0.03	0.05	0.04	0.04
ros. 10 sin.		9.3E+5	6.6E+5	1.8E+6	8.7E+5	6.3E+5	2.7E+3	1.6E+4	3.9E+4	1.6E+4	1.3E+4	0.01	0.03	0.04	0.03	0.03
ros. 20 sin.		3.6E+6	1.0E+7	2.5E+7	9.8E+6	9.2E+6	6.0E+4	9.4E+5	2.3E+6	6.4E+5	7.6E+5	0.02	0.08	0.12	0.09	0.09
ros. 50 sin.		2.3E+8	6.4E+8	2.0E+9	8.0E+8	6.5E+8	6.6E+7	2.2E+8	8.7E+8	2.8E+8	2.2E+8	0.10	0.21	0.36	0.28	0.26
ros. 100 sin.		2.5E+9	5.2E+9	1.1E+10	5.2E+9	5.0E+9	1.5E+9	3.2E+9	7.2E+9	3.2E+9	3.2E+9	0.14	0.47	0.56	0.51	0.51
rast. 2 lin.		2.1E+0	1.2E+0	1.4E+0	1.1E+0	1.2E+0	4.5E-3	5.8E-3	3.0E-2	5.8E-3	6.3E-3	0.01	0.02	0.07	0.07	0.04
rast. 5 lin.		2.2E+1	2.0E+1	2.6E+1	2.2E+1	2.0E+1	6.9E+0	7.3E+0	1.1E+1	8.8E+0	7.2E+0	0.05	0.17	0.25	0.30	0.26
rast. 10 lin.		1.3E+2	9.5E+1	1.2E+2	9.9E+1	9.5E+1	8.1E+1	5.7E+1	6.4E+1	5.7E+1	5.6E+1	0.08	0.33	0.33	0.39	0.41
rast. 20 lin.		3.9E+2	3.6E+2	5.0E+2	3.7E+2	3.6E+2	2.5E+2	2.2E+2	2.9E+2	2.2E+2	2.2E+2	0.10	0.39	0.41	0.43	0.48
rast. 50 lin.		4.9E+3	2.7E+3	6.4E+3	3.0E+3	2.6E+3	4.1E+3	1.8E+3	4.6E+3	2.0E+3	1.8E+3	0.15	0.39	0.59	0.55	0.57
rast. 100 lin.		5.2E+4	3.0E+4	5.1E+4	3.0E+4	3.0E+4	4.7E+4	2.5E+4	4.3E+4	2.4E+4	2.5E+4	0.17	0.40	0.66	0.72	0.74
rast. 2 sin.		1.7E+1	2.4E+0	2.7E+0	2.7E+0	2.4E+0	9.4E+0	9.0E-2	2.0E-1	1.2E-1	8.9E-2	0.04	0.04	0.11	0.10	0.09
rast. 5 sin.		4.6E+1	2.8E+1	4.0E+1	3.3E+1	2.8E+1	2.5E+1	1.1E+1	1.6E+1	1.3E+1	1.1E+1	0.06	0.25	0.27	0.27	0.29
rast. 10 sin.		3.1E+2	2.0E+2	2.8E+2	2.2E+2	2.0E+2	1.6E+2	7.9E+1	1.0E+2	8.0E+1	7.9E+1	0.12	0.18	0.20	0.18	0.20
rast. 20 sin.		8.0E+2	6.8E+2	1.0E+3	7.2E+2	6.8E+2	4.8E+2	3.1E+2	4.4E+2	3.1E+2	3.1E+2	0.10	0.28	0.33	0.29	0.30
rast. 50 sin.		6.7E+3	8.8E+3	1.5E+4	9.9E+3	8.8E+3	4.0E+3	5.1E+3	9.4E+3	5.8E+3	5.1E+3	0.14	0.43	0.56	0.50	0.48
rast. 100 sin.		2.9E+4	3.9E+4	5.2E+4	3.9E+4	3.9E+4	2.2E+4	3.0E+4	4.2E+4	3.0E+4	3.0E+4	0.23	0.63	0.74	0.69	0.70
Best frequen.		13	7	1	6	9	22	2	0	6	6	35	1	0	0	0

Table 5: Results for dynPS0 on MPB-Noisy benchmark

Metric		BOG			BEBC			RCS		
Benchmark		1.05	1.49	2.00	1.05	1.49	2.00	1.05	1.49	2.00
noisy (0)	2	-22.64	-142.65	-155.18	153.76	33.75	21.40	0.91	0.35	0.41
noisy (0)	20	-31.62	-22.31	-15.99	149.78	176.51	190.97	0.84	0.90	0.94
noisy (0)	50	-0.06	-0.40	-0.26	194.24	193.73	193.96	1.00	1.00	1.00
noisy (0)	100	0.00	-0.02	-0.01	187.29	187.27	187.28	1.00	1.00	1.00
noisy (0.1)	2	-22.66	-23.53	-144.48	153.76	153.76	32.10	0.91	0.98	0.52
noisy (0.1)	20	-32.30	-22.67	-16.09	149.16	176.79	190.48	0.83	0.90	0.93
noisy (0.1)	50	-0.15	-0.17	-0.27	194.13	194.06	193.94	1.00	1.00	1.00
noisy (0.1)	100	0.00	-0.01	-0.01	187.29	187.28	187.28	1.00	1.00	1.00
noisy (1)	2	-21.59	-104.53	-171.54	153.76	71.47	4.05	0.91	0.60	0.14
noisy (1)	20	-26.31	-21.90	-11.29	159.74	175.45	200.28	0.86	0.90	0.95
noisy (1)	50	-0.04	-0.36	-0.22	194.27	193.78	194.01	1.00	1.00	1.00
noisy (1)	100	0.00	-0.01	-0.01	187.29	187.28	187.28	1.00	1.00	1.00
noisy (10)	2	-123.79	-139.73	-124.78	28.27	28.11	40.25	0.20	0.20	0.31
noisy (10)	20	-0.61	-0.58	-0.28	223.50	223.82	224.66	1.00	1.00	1.00
noisy (10)	50	0.00	-0.02	-0.01	194.31	194.29	194.30	1.00	1.00	1.00
noisy (10)	100	0.00	0.00	0.00	187.29	187.29	187.29	1.00	1.00	1.00
Best frequency		4	6	6	4	6	6	5	6	5

Table 6: Results for pred2p on MPB-Noisy benchmark

Metric		BOG			BEBC			RCS		
Benchmark		1.05	1.49	2.00	1.05	1.49	2.00	1.05	1.49	2.00
noisy (0)	2	-22.70	-43.93	-159.17	153.76	133.19	17.14	0.91	0.93	0.34
noisy (0)	20	-32.82	-21.89	-15.80	149.43	177.90	191.41	0.83	0.90	0.94
noisy (0)	50	-0.64	-0.27	-0.27	193.36	193.92	193.94	1.00	1.00	1.00
noisy (0)	100	-0.07	-0.04	-0.01	187.21	187.25	187.28	1.00	1.00	1.00
noisy (0.1)	2	-22.67	-44.50	-156.18	153.76	132.65	20.00	0.91	0.87	0.37
noisy (0.1)	20	-34.03	-22.65	-15.53	146.15	176.18	192.06	0.83	0.90	0.94
noisy (0.1)	50	-0.26	-0.24	-0.27	193.90	193.96	193.93	1.00	1.00	1.00
noisy (0.1)	100	-0.09	-0.03	-0.01	187.18	187.26	187.28	1.00	1.00	1.00
noisy (1)	2	-21.76	-79.04	-167.25	153.76	97.49	8.41	0.91	0.73	0.19
noisy (1)	20	-29.27	-21.66	-11.15	151.31	176.18	200.69	0.85	0.90	0.95
noisy (1)	50	-0.14	-0.35	-0.23	194.11	193.79	194.00	1.00	1.00	1.00
noisy (1)	100	-0.05	-0.03	-0.01	187.23	187.26	187.28	1.00	1.00	1.00
noisy (10)	2	-123.95	-134.22	-129.14	28.75	33.34	33.48	0.20	0.24	0.28
noisy (10)	20	-0.93	-0.58	-0.29	222.27	223.84	224.64	0.99	1.00	1.00
noisy (10)	50	-0.01	-0.02	-0.01	194.30	194.29	194.30	1.00	1.00	1.00
noisy (10)	100	0.00	0.00	0.00	187.29	187.29	187.29	1.00	1.00	1.00
Best frequency		9	3	4	11	2	3	11	2	3

Table 7: Results for pred3 on MPB-Noisy benchmark

Metric		BOG			BEBC			RCS		
Benchmark		1.05	1.49	2.00	1.05	1.49	2.00	1.05	1.49	2.00
noisy (0)	2	-23.11	-104.97	-160.75	153.76	71.79	15.32	0.91	0.58	0.31
noisy (0)	20	-17.07	-24.18	-16.15	191.60	175.46	191.06	0.91	0.90	0.93
noisy (0)	50	-1.41	-0.32	-0.28	191.91	193.82	193.92	0.99	1.00	1.00
noisy (0)	100	-0.17	-0.11	-0.03	187.08	187.15	187.26	1.00	1.00	1.00
noisy (0.1)	2	-23.05	-99.15	-153.68	153.76	77.57	22.29	0.91	0.55	0.41
noisy (0.1)	20	-15.80	-24.67	-16.30	192.33	174.82	190.40	0.91	0.89	0.93
noisy (0.1)	50	-0.75	-0.31	-0.28	193.03	193.83	193.92	1.00	1.00	1.00
noisy (0.1)	100	-0.12	-0.12	-0.02	187.13	187.14	187.26	1.00	1.00	1.00
noisy (1)	2	-22.42	-111.65	-166.98	153.76	64.59	7.69	0.91	0.52	0.18
noisy (1)	20	-33.21	-21.90	-11.33	144.28	175.34	199.96	0.83	0.90	0.95
noisy (1)	50	-0.29	-0.22	-0.22	193.80	193.97	193.99	1.00	1.00	1.00
noisy (1)	100	-0.16	-0.10	-0.02	187.08	187.16	187.27	1.00	1.00	1.00
noisy (10)	2	-126.34	-124.87	-118.78	31.56	41.15	39.48	0.20	0.29	0.33
noisy (10)	20	-1.11	-0.53	-0.28	221.58	223.90	224.64	0.99	1.00	1.00
noisy (10)	50	-0.01	-0.02	-0.01	194.29	194.29	194.30	1.00	1.00	1.00
noisy (10)	100	-0.01	0.00	0.00	187.28	187.29	187.29	1.00	1.00	1.00
Best frequency		10	3	3	10	3	3	11	2	3

Table 8: Results for pred3p on MPB-Noisy benchmark

Metric		BOG			BEBC			RCS		
Benchmark		1.05	1.49	2.00	1.05	1.49	2.00	1.05	1.49	2.00
noisy (0)	2	-23.09	-100.37	-155.65	153.76	76.36	20.44	0.91	0.62	0.38
noisy (0)	20	-16.92	-24.59	-16.92	191.73	174.56	189.46	0.91	0.89	0.93
noisy (0)	50	-1.40	-0.31	-0.28	191.93	193.83	193.93	0.99	1.00	1.00
noisy (0)	100	-0.18	-0.11	-0.02	187.06	187.15	187.26	1.00	1.00	1.00
noisy (0.1)	2	-23.04	-109.83	-154.42	153.76	66.87	21.46	0.91	0.49	0.39
noisy (0.1)	20	-15.93	-25.96	-15.16	192.03	171.89	192.80	0.91	0.89	0.94
noisy (0.1)	50	-0.75	-0.32	-0.27	193.03	193.82	193.93	1.00	1.00	1.00
noisy (0.1)	100	-0.15	-0.11	-0.02	187.10	187.16	187.27	1.00	1.00	1.00
noisy (1)	2	-22.44	-119.38	-164.79	153.76	56.87	9.72	0.91	0.49	0.21
noisy (1)	20	-32.62	-21.98	-11.35	145.66	175.32	199.76	0.84	0.90	0.95
noisy (1)	50	-0.30	-0.23	-0.22	193.79	193.96	194.00	1.00	1.00	1.00
noisy (1)	100	-0.15	-0.11	-0.02	187.10	187.16	187.27	1.00	1.00	1.00
noisy (10)	2	-126.97	-120.45	-121.70	30.68	46.24	36.86	0.20	0.32	0.31
noisy (10)	20	-1.13	-0.53	-0.27	221.56	223.90	224.66	0.99	1.00	1.00
noisy (10)	50	-0.01	-0.02	-0.01	194.29	194.29	194.30	1.00	1.00	1.00
noisy (10)	100	-0.01	0.00	0.00	187.28	187.29	187.29	1.00	1.00	1.00
Best frequency		10	3	3	10	3	3	11	2	3